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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/669,558      | 09/25/2003  | Yukitaka Hori        | 243197US2           | 4020             |

22850 7590 01/11/2005

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ALEXANDRIA, VA 22314

EXAMINER

PHAM, LONG

ART UNIT PAPER NUMBER

2814

DATE MAILED: 01/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/669,558

Applicant(s)

HORI ET AL.

Examiner

Long Pham

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |  |
|---|--|
| <p>1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)</p> <p>2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</p> <p>3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br/>Paper No(s)/Mail Date <u>09/25/03</u>.</p> | <p>4) <input type="checkbox"/> Interview Summary (PTO-413)<br/>Paper No(s)/Mail Date. ____.</p> <p>5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)</p> <p>6) <input checked="" type="checkbox"/> Other: <u>labeled drawings</u>.</p> |
|---|--|

## **DETAILED ACTION**

### ***General Information***

The labeled drawing sheet(s) of the present invention are attached to show examiner's understanding of the disclosed and claimed inventions.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikuji (Japan 62-205635) in combination with Kaihara et al. (US 6,140,906).

With respect to claim 1, Ikuji "635 teaches a semiconductor device having a sealing structure for a semiconductor chip, comprising (see English abstract and figs. 3 and 4):

a plurality of main electrodes provided on main surfaces of the semiconductor chip 2;

a plurality of external electrodes 5 electrically connected to the main electrodes via connection members 3, respectively; and

a sealing member 4 made of a glass based sealing material for encapsulating at least the semiconductor chip, the main electrodes, and the connection members.

Ikuji teaches that a part of main electrodes are connected to a part of external electrodes but fails to teach that external electrodes and main electrodes by a silver based brazing material.

Kaihara et al. '906 teach connecting two conductors by silver based brazing material to allow device to work in high temperature environments. See col. 1, lines 5-10 and col.25, lines 50-60.

It would have been obvious to one of ordinary skill in the art of making semiconductor devices to connect external electrodes and main electrodes by silver based brazing material in Ikuji's device to obtain the above advantage.

Further with respect to claim 1, it is noted the silver based brazing material of Haihara et al. inherently has a high fusing point. Further, it is noted that since Ikuji in combination with Kaihara et al. teach the claimed device, the above device is of a wide gap type and the fusing point of the glass based sealing material is inherently lower than that of the silver based brazing material.

With respect to claim 2, it is submitted that the brazing material of Kaihara et al. would inherently serve as a passage for dissipating heat to the outside.

3. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ikuji (Japan 62-205635) in combination with Tanaka et al. (US 2004/0027502).

With respect to claim 3, Ikuji "635 teaches a semiconductor device having a sealing structure for a semiconductor chip, comprising (see English abstract and figs. 3 and 4):

a plurality of main electrodes provided on main surfaces of the semiconductor chip 2;

a plurality of external electrodes 5 electrically connected to the main electrodes via connection members 3, respectively; and

a sealing member 4 made of a glass based sealing material for encapsulating at least the semiconductor chip, the main electrodes, and the connected portions of external electrodes.

Ikuji teaches connecting the main electrodes and external electrodes by connection members but fails to teach connecting main electrodes directly to the external electrodes.

Tanaka et al. teach connecting a main electrode directly to an external electrode to reduce the redundancy against shortage. See [0016].

It would have been obvious to one of ordinary skill in the art of making semiconductor devices to connect the main electrode directly to the external electrodes in Ikuji's device to achieve the above advantage.

Further with respect to claim 3, it is noted that since Ikuji in combination with Tanaka et al. teach the claimed device, the above device is of a wide gap type.

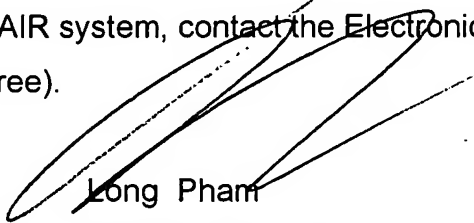
Further with respect to claim 3, the limitation "by pressure contact" is not given weight in the patentability determination of the device of claim 3.

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Long Pham whose telephone number is 571-272-1714. The examiner can normally be reached on M-F, 7:30AM-3:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on 571-272-1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Long Pham  
Primary Examiner  
Art Unit 2814

LP